

RESEARCH COUNCIL OF ALBERTA

Information Series No. 41

ALBERTA MOTOR GASOLINE SURVEY FOR 1962

by

J. S. Charlesworth, G. Stott, and M. Wall



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A45 1962

Research Council of Alberta  
87th Avenue and 114th Street  
Edmonton, Alberta  
1963



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## ALBERTA MOTOR GASOLINE SURVEY FOR 1962

In 1939 at the request of the Provincial Government, the Research Council of Alberta made a study of the quality of motor gasoline sold in the Province of Alberta. The results obtained from this survey were later used as the basis for establishing Alberta Standard Specifications for motor gasoline. These specifications were published as Regulations under amendments to the Fuel Oil Licensing Act of 1936 and became effective in the spring of 1941.

During the war years from 1942 to 1945 the Alberta specifications were rendered non-active since the quality of gasoline for the whole of Canada came under the jurisdiction of the Dominion Oil Controller. Following the war the Alberta Government regulations again came into effect. They have been revised from time to time in order to keep them in line with consumer needs and modern refinery practice.

During 1955 the Canadian Government Specifications for gasoline were amended. Recognizing that there had been an industrial shift from the motor to the research method of determining octane numbers, the major change made was to specify octane numbers by the research test procedure and new specification values were established accordingly. No corresponding change was made in the Alberta Government Specifications at that time; however, one test engine at the Research Council was immediately converted to the research test procedure. Octane ratings have been made by both test methods in the Research Council since that time.

In 1957 it was decided that the Alberta specifications should be similarly revised and brought into line with those of the Canadian Government. These revisions became effective May 7, 1958. In addition to the change in octane ratings, a few other minor changes were also made.

In 1961 the Canadian Government Specifications were again revised. In addition to some minor alterations, two significant changes were made: firstly, a sharp increase in the minimum requirement for octane number and, secondly, a substantial increase in the maximum allowable quantity of tetraethyl lead. Furthermore, the reporting of lead values was changed from millilitres per imperial gallon to grams of lead per imperial gallon. The need for an upward revision in minimum octane numbers was obvious, as automotive demand had resulted in refinery production of gasolines having octane numbers far above existing specification limits. The need for an upward revision of lead was not so clearly evident, and although it was strongly recommended by the producers of tetraethyl lead, it was granted only after careful consideration based on a study of the situation in the United States and on requests for an increase on the part of some Canadian refiners.

Late in 1961 it was decided that the Alberta specifications should be similarly revised. The revisions became effective on June 7,



1962. Attached as appendix 1 to this report is a copy of the current (1962) Alberta Standards for Gasoline as listed under the Regulations of the Fuel Oil Licensing Act. Attached as appendix 2 is a tabulation of the changes made in Alberta specifications since they were established in 1941.

From 1939 to 1956 the study of gasoline quality was maintained by systematic surveys, the samples of gasoline for test purposes being purchased at regular retail outlets and at regular retail prices. The information obtained from these surveys has been published as Research Council of Alberta Mimeographed Circulars\*. Following completion of the 1954 survey it was decided that no further annual studies would be required unless warranted by special circumstances. No survey was made in 1955.

During the latter part of 1955 and early in 1956 reports were constantly being received of a marked increase in octane ratings - both research and motor. It was decided, therefore, to review again the Alberta situation in 1956. The reports of much higher octane ratings were proven correct by this survey. While previous data indicated that this trend started in 1949, it was evident that the greatest increase had taken place since 1954. Reports of further increases continued after 1956, and with revisions in the Alberta specifications imminent it was decided to again review the situation in 1958. As was the case in 1956, the 1958 data showed a further marked increase in octane ratings. However, the increase was not as great as that shown for the previous two years. Between 1958 and 1960, octane levels for both motor and research methods remained stable. In the case of the research ratings, the current survey indicates this stability has continued. Motor ratings have shown a slight increase in the last two years.

The Alberta Specifications for Gasoline provide for the classification of samples into four groups, namely, Premium grade, Regular grade, and for each of the foregoing, Summer grade and Winter grade. Since the quality of Winter gasolines had not been surveyed since 1954, both Winter and Summer gasolines were included in the 1958 and 1960 surveys. Similarly, the report for 1962 provides, in summary form, information on the general quality level of Alberta gasolines as of January (winter) and June (summer) of 1962. Comparison data from previous reports are also included. As in all surveys since 1953, sampling was confined largely to the cities of Calgary and Edmonton although a few samples were obtained from other locations in the Province.

Test data in this report are based on the latest standard test procedures of the American Society for Testing Materials (A. S. T. M.). They are as follows: Octane number, A. S. T. M. method D-357 and A. S. T. M. method D-908; Tetraethyl lead, A. S. T. M. method D-526; Reid vapour

\* R.C.A. Mimeographed Circulars Nos. 2, 4, 8, 9, 11, 14, 16, 19, 21, 27 and 31 represent Alberta Motor Gasoline Surveys, 1939 to 1947, 1948, 1949, 1950, 1951, 1952, 1953, 1954, 1956, 1958 and 1960 respectively.



pressure, A.S.T.M. method D-323; Gravity at 60° Fahrenheit in degrees A.P.I., A.S.T.M. method D-287; Distillation range in degrees Fahrenheit on a basis of percentage evaporated, A.S.T.M. method D-86; Sulfur content, A.S.T.M. method D-90; Gum content, A.S.T.M. method D-381; Corrosion, A.S.T.M. method D-130.

Tables I and II list the average, the maximum, and the minimum values obtained for each test for both Premium and Regular grades of Winter and Summer gasolines respectively. For comparative purposes the Alberta specification limits are also shown.

Tables III, IV, V, and VI list, for comparative purposes, the 1962 data and similar data from previous years.

Table VII lists the total number of samples which failed on each specification test in the complete survey. All failures were a minor nature and not of sufficient magnitude to condemn the product.

Table VIII lists the data for northern and for southern Alberta, averaged separately.

Table IX lists the companies whose products were included in the 1962 survey.

Figure 1 shows, in graphical form, the variations in octane ratings from 1940 to 1962.

Table VIII shows that on the basis of research octane ratings, no significant difference exists between gasolines from northern and southern Alberta. However, motor octane ratings are slightly higher for the Premium grade gasolines in southern Alberta. It is evident, too, that a larger quantity of tetraethyl lead is required in southern Alberta to maintain comparable research ratings with northern Alberta. Minor differences may also be noticed in the distillation ranges and gravity.

Four points of particular interest to be noted from a comparison of the 1962 data with the 1960 data are:

1. Research octane values have remained stable. Motor octane values have increased slightly.
2. The overall volatility of gasoline has increased slightly.
3. The average quantity of tetraethyl lead used has decreased slightly in spite of the relaxation in the specification.
4. The total number of samples failing to comply with specification limits decreased.



Table I. Summary of Analytical Data Winter Gasolines - January 1962

	Premium Grade Gasoline			Regular Grade Gasoline				
	Spec.	Ave. (Number of Samples 41)	Max. Min.	Spec.	Ave. (Number of Samples 41)	Max. Min.		
Octane Number:								
Research								
Motor								
Tetraethyl Lead, gm./gal.	Min. 95	95.9	97.1	94.8	Min. 89	89.8	91.4	88.7
		88.4	90.7	86.8		83.3	87.9	80.6
	Max. 5.05	2.82	3.89	1.80	Max. 5.05	1.69	4.92	0.11
Vapour Pressure, lbs.	Min. 9	11.2	13.5	10.7	Min. 9	12.4	13.5	10.7
	Max. 14	61.9	66.2	58.7	Max. 14	64.6	70.5	63.3
Gravity, °A.P.I.								4
Distillation Range, °F.								
I.B.P.		92	106	84		92	105	87
10%	Min. 95	111	124	101	Min. 95	110	120	100
	Max. 125				Max. 125			
50%	Max. 235	200	227	183	Max. 235	197	218	169
90%	Max. 365	314	331	296	Max. 365	317	338	296
E.P.		389	420	371		385	421	334
Sulphur, %	Max. 0.15	0.03	0.05	0.01	Max. 0.15	0.04	0.07	0.01
Gum, mgm./100 ml.	Max. 7	0.7	4.0	0.0	Max. 7	0.4	1.2	0.0
Corrosion	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Colour	Red	Red	Red	Red	Yellow	Yellow	Yellow	Yellow



Table II. Summary of Analytical Data Summer Gasolines - July 1962

	Premium Grade Gasoline				Regular Grade Gasoline			
	Spec.	Ave. (Number of Samples 39)	Max.	Min.	Spec.	Ave. (Number of Samples 39)	Max.	Min.
Octane Number:								
Research								
Motor								
Tetraethyl Lead, gm./gal.	Min. 95	95.9	97.3	93.5	Min. 89	90.2	91.2	89.3
Vapour Pressure, lbs.		87.7	89.9	84.8		83.8	88.7	81.9
Gravity, °A.P.I.	Max. 5.05	3.12	3.89	2.33	Max. 5.05	2.92	4.05	2.12
Distillation Range, °F.	Max. 11	9.0	10.5	7.6	Max. 11	9.0	10.4	7.9
I.B.P.		60.0	67.2	55.5		62.3	67.7	60.2
10%		102	116	89		100	114	89
50%	Min. 110	129	156	116	Min. 110	127	148	118
90%	Max. 135				Max. 135			
E.P.	Max. 245	206	214	190	Max. 245	205	215	183
Sulphur, %	Max. 365	311	327	296	Max. 365	320	342	270
Gum, mgm./100 ml.		390	422	369		390	414	312
Corrosion	Max. 0.15	0.03	0.08	0.02	Max. 0.15	0.05	0.07	0.03
Colour	Max. 7	1.1	4.6	0.0	Max. 7	0.9	5.6	0.0
	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
	Red	Red	Red	Red	Yellow	Yellow	Yellow	Yellow



Table III. Average Analysis of Winter Gasolines Premium Grade 1940 - 1962

Year	Octane Number		Lead, gm./gal.	Vapour Pressure	Gravity, °A.P.I.	Distillation Range, °F.			Sulphur, %	Gum, mgm./100 ml.
	Research	Motor				I.B.P.	10%	50%		
1940		78.3		10.5	63.3	91	127	229	0.06	2.0
1942		75.6		10.6			131	240	0.04	2.2
1943		76.3		9.9			130	239	0.06	1.3
1944		75.4		9.2			131	251	0.04	1.4
1945		73.9		9.4	60.4	90	124	244	0.06	2.8
1946		77.1		9.1	62.0	93	125	223	0.05	2.8
1947		76.1	2.07	9.9	62.8	89	120	230	0.05	2.3
1948		77.3	3.15	9.8	62.0	94	128	235	0.06	2.6
1949		77.1	3.12	10.1	62.0	88	120	229	0.06	2.8
1950		76.0	2.40	10.2	62.2	95	123	227	0.05	1.7
1951		77.0	2.55	10.5	63.1	89	120	227	0.06	1.4
1952		78.0	2.60	10.6	62.1	98	123	223	0.06	1.5
1953		80.3	1.43	10.5	61.6	96	122	220	0.05	1.7
1954		80.4		10.7	61.5	93	119	227	0.06	1.4
1958	94.7	85.6	2.94	11.4	60.9	94	117	217	0.04	1.9
1960	95.9	86.9	3.31	12.4	60.9	86	110	212	0.04	2.3
1962	95.9	88.4	2.82	11.2	61.9	92	111	200	0.03	0.7



Table IV. Average Analysis of Summer Gasolines Premium Grade 1940 - 1962

Year	Octane Number		Lead, gm./gal.	Vapour Pressure	Gravity, °A.P.I.	Distillation Range, °F.				Sulphur, %	Gum, mgm./100 ml.
	Research	Motor				I.B.P.	10%	50%	90%		
1940		77.4		8.5	60.0	101	139	245	350	0.05	0.9
1941		76.6		8.5	60.3	92	133	246	354	0.05	1.7
1942		76.2		8.8			142	247	350	0.04	1.3
1943		77.0		8.5			138	248	357	0.07	2.2
1944		75.3		9.1			131	249	367	0.07	3.6
1945		74.1		7.1	59.6	98	138	241	352	0.04	3.4
1946		77.2		8.7	61.8	94	128	232	338	0.06	3.9
1947		75.9	2.85	7.7	60.4	96	137	238	341	0.06	2.7
1948		77.5	3.31	8.5	60.6	98	133	236	339	0.06	3.9
1949		75.6	2.48	8.6	60.3	95	133	235	341	0.05	4.7
1950		76.9	2.92	8.5	60.8	96	131	233	344	0.06	2.9
1951		77.0	2.42	9.0	61.0	98	133	230	342	0.06	2.4
1952		78.8	2.97	8.6	60.4	101	132	234	343	0.07	2.4
1953		79.6	2.40	8.9	60.7	92	126	227	340	0.05	1.1
1954		79.9		9.2	60.7	96	127	227	325	0.06	2.9
1956	92.1	84.3	2.90	9.4	61.5	98	127	223	323	0.04	2.3
1958	96.1	87.0	3.38	9.2	58.1	100	125	220	327	0.04	2.7
1960	95.9	86.2	3.11	9.6	58.8	94	125	218	320	0.04	2.0
1962	95.9	87.7	3.12	9.0	60.0	102	129	206	311	0.03	1.1



Table V. Average Analysis of Winter Gasolines Regular Grade 1940 - 1962

Year	Octane Number		Lead, gm./gal.	Vapour Pressure	Gravity, °A.P.I.	Distillation Range, °F.				Sulphur, %	Gum, mgm./100 ml.
	Research	Motor				I.B.P.	10%	50%	90%	E.P.	
1940		71.2		10.3	62.3	93	131	241	356	401	1.9
1945		70.2		8.9	60.1	92	127	247	353	408	3.0
1946		72.0		8.7	60.6	95	131	236	347	400	3.4
1947		72.9	1.54	9.3	61.4	91	125	238	340	393	3.5
1948		73.5	2.09	10.1	61.8	93	128	241	339	391	2.1
1949		73.7	2.48	9.5	60.8	90	128	244	336	391	2.8
1950		73.3	1.85	10.5	61.1	94	125	242	346	394	1.4
1951		74.8	2.27	10.8	62.1	89	118	236	340	394	1.4
1952		74.7	1.38	10.8	61.7	99	125	230	334	390	1.1
1953		76.9	1.46	10.3	61.0	97	124	231	338	397	1.2
1954		77.8		10.8	62.6	93	121	230	332	383	0.9
1958	88.3	81.7	2.61	11.5	64.4	94	116	207	312	373	1.3
1960	89.6	81.8	2.15	12.4	64.7	86	108	199	318	386	1.2
1962	89.8	83.3	1.69	12.4	64.6	92	110	197	317	385	0.4



Table VI. Average Analysis of Summer Gasolines Regular Grade 1940 - 1962

Year	Octane Number		Lead, gm./gal.	Vapour Pressure	Gravity °A.P.I.	Distillation Range, °F.			Sulphur, %	Gum, mgm./100 ml.
	Research	Motor				I.B.P.	10%	50%		
1940		69.9		8.7	60.0	100	141	249	0.06	0.9
1941		70.8		8.1	59.1	92	138	262	0.06	2.0
1945		69.8		6.9	59.1	98	140	247	0.04	2.7
1946		72.9		8.3	60.9	96	131	239	0.05	5.6
1947		72.5	1.72	7.6	60.5	95	137	242	0.06	4.7
1948		73.9	2.24	8.5	60.3	96	132	247	0.06	3.4
1949		71.8	1.47	8.6	59.6	93	132	245	0.05	6.5
1950		74.0	2.35	8.4	60.5	97	133	241	0.06	2.1
1951		74.1	1.68	8.9	60.8	95	131	236	0.05	1.6
1952		76.2	2.20	8.3	59.7	100	137	242	0.06	1.4
1953		76.8	1.88	9.0	60.8	93	128	232	0.05	1.2
1954		77.7		9.4	62.1	97	130	229	0.06	1.3
1956	85.9	80.2	2.35	8.8	62.0	95	128	220	0.05	2.2
1958	89.9	81.9	2.42	9.2	60.8	100	124	218	0.06	1.2
1960	90.1	82.5	2.46	9.6	61.9	93	123	215	0.05	1.6
1962	90.2	83.8	2.92	9.0	62.3	100	127	205	0.05	0.9



Table VII. Distribution of Failures  
Number of Samples Failing Each Specification Test, 1962

	Premium Grade Gasoline			Regular Grade Gasoline			
	Winter		Summer	Winter		Summer	
	North	South		North	South	North	South
Octane Number	2			3	1	6	
Tetraethyl Lead							
Vapour Pressure							
Distillation Range:							
10%			1		8	1	2
50%							
90%							
Sulphur							
Gum							
Corrosion							
Colour							
Freezing Point							

Note: All failures were of a minor nature and were not of sufficient magnitude to condemn the product.



Table VIII. Average Analysis of 1960 Gasolines, Northern and Southern Alberta

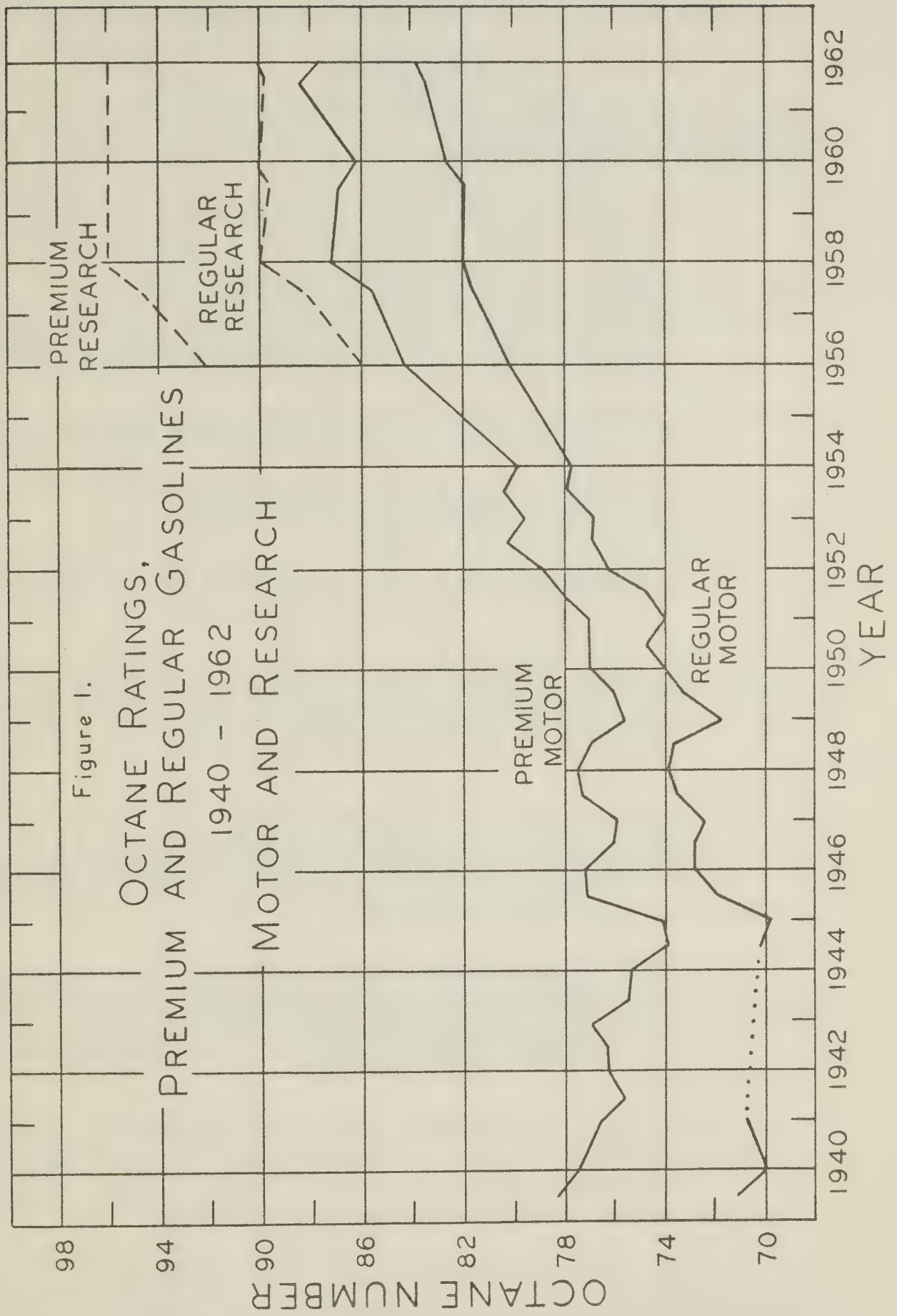
	Premium Grade Gasoline				Regular Grade Gasoline			
	Winter		Summer		Winter		Summer	
	North	South	North	South	North	South	North	South
Octane Number: Research	95.6	96.3	95.8	96.2	89.7	89.9	90.2	90.2
Motor	87.5	89.5	86.7	88.9	83.0	83.8	83.4	84.3
Tetraethyl Lead, gm./gal.	2.60	3.11	2.96	3.32	1.18	2.33	2.77	3.11
Vapour Pressure, lbs.	12.5	12.2	9.3	8.5	12.5	12.4	9.2	8.7
Gravity, °A.P.I.	62.5	61.1	61.3	58.5	64.7	64.6	62.9	61.6
Distillation Range, °F.								
I.B.P.	91	94	99	105	91	93	97	105
10%	109	114	125	134	109	111	124	131
50%	203	195	207	204	199	193	207	203
90%	319	309	315	306	318	315	327	312
E.P.	392	386	392	386	386	384	395	384
Sulphur, %	0.03	0.03	0.03	0.04	0.02	0.05	0.04	0.06
Gum, mgm./100 ml.	0.9	0.5	1.4	0.7	0.4	0.4	1.4	0.2
Corrosion	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Colour	Red	Red	Red	Red	Yellow	Yellow	Yellow	Yellow



## Table IX. Companies

Anglo American Exploration Limited.  
British American Oil Co. Limited.  
Canadian Oil Companies.  
Davis Automotive Centre Limited.  
Delkay Oils Limited.  
Edmonton Co-op Association Limited.  
Great West Distributors Limited.  
Haslan & MacDonald Limited.  
Husky Oil and Refining Limited.  
Imperial Oil Limited.  
Mowhawk Oils Limited.  
North Star Oil Limited.  
Oughton Bros. Limited.  
Pacific Petroleums Limited.  
Phillips Petroleum Co. Limited.  
Royalite Oil Co. Limited.  
Sanford Oils Limited.  
Simpson - Sears Limited.  
Seventy - Seven Oil Co. Limited.  
Shell Oil Co. of Canada Limited.  
Standard Oil Co. of B.C. Limited.  
Super Market Oils Limited.  
Stock Yards Oil Limited.  
Texaco Canada Limited.  
Trimble & Sons Limited.  
T. & W. Distributors Limited.  
Wainwright Producers & Refiners Limited.  
Woodwards Limited.







## APPENDIX 1

ALBERTA STANDARD SPECIFICATIONS FOR GASOLINE

(Extract from The Alberta Gazette of June 15, 1962)

STANDARDS

33. In this part and the Schedule A attached, unless the context requires a contrary meaning,

(a) "Gasoline" means and includes volatile hydrocarbon fuel suitable for use in the lighter internal combustion engines, requiring a carburant fuel, used in motor vehicles; but does not include material known as aviation fuel, nor the heavier fuels in the classes known as kerosene, engine distillate and other fuels suitable only for use in tractors and heavy engines.

(b) "Minister" means the Minister of Industry and Development.

(c) "Summer Gasoline" means the gasoline normally sold in the months of May to September (inclusive).

(d) "Winter Gasoline" means the gasoline normally sold in the months of November to March (inclusive).

34. (a) There are hereby established within the Province two grades of gasoline, namely "Premium" and "Regular" in accordance with the standards set out in Schedule A attached hereto.

(b) No gasoline shall be sold or offered for sale as "Premium" gasoline unless the said gasoline complies in every respect with each and every specification for "Premium" gasoline set out in Schedule A attached hereto.

(c) No gasoline shall be sold or offered for sale as "Regular" gasoline unless the said gasoline complies in every respect with each and every of the specifications for "Regular" gasoline set out in Schedule A attached hereto.

(d) No person shall sell or offer for sale by retail any gasoline other than "Premium" or "Regular" gasoline as established by the standards set out in Schedule A attached hereto, or blended gasoline in accordance with section 35 below.

35. No blend of gasoline with benzol and/or alcohol which fails to meet the requirements of the standard specifications set out in Schedule A shall be sold or offered for sale until the specification for its manufacture has been submitted to and approved by the Minister.



36. Whenever gasoline is sold or offered for sale a plate or sign clearly indicating to the customer the grade of the gasoline sold or offered for sale must be conspicuously displayed on the gasoline pump or other container from which the gasoline is supplied to the customer. The said gasoline grade plates or display signs shall be of a type and design approved by the Minister.

37. Whenever it appears to the satisfaction of the Minister that the wholesale or retail vendor of gasoline has failed to maintain the standard specifications hereby prescribed, the wholesale or retail licence of the vendor, as the case may be, may be suspended or cancelled by the Minister.

38. No gasoline or naphtha which has a Reid vapour pressure exceeding the values set forth in the standard specifications hereby prescribed shall be sold or offered for sale within the Province.

39. All "Premium" gasoline shall be coloured red, and no gasoline other than "Premium" shall be so coloured.

40. All "Regular" gasoline shall be coloured a distinctive colour, other than red. Such distinctive colour shall be registered with and approved by the Minister, and no other gasoline than "Regular" shall be so coloured.

41. "Summer Gasoline" as set out in the said Schedule A is gasoline intended for sale in the months of May to September (inclusive). "Winter Gasoline" as set out in the said Schedule A is gasoline intended for sale in the months of November to March (inclusive).

42. During the periods in which the changes are being made from summer to winter gasoline and the reverse, that is normally during the months of October and April, a gasoline will be regarded as satisfactory if it complies with either the winter or summer specification for its grade.

43. The standard specifications for gasoline as shown in Schedule A may be modified from time to time as found necessary by the Minister but such modification shall not become effective until ample notification has been given to the operators concerned.



## SCHEDULE A

STANDARD SPECIFICATIONS FOR GASOLINE

## 1. Requirement Specific for Premium Gasoline.

(a) Octane Number: The octane number shall not be less than 95 as determined by the C.F.R. Research Method of A.S.T.M. procedure D-908.

## 2. Requirement Specific for Regular Gasoline.

(a) Octane Number: The octane number shall not be less than 89 as determined by the C.F.R. Research Method A.S.T.M. procedure No. D-908.

## 3. Requirements Common to both Premium and Regular Gasoline.

(a) Appearance: The gasoline shall be clear i.e., free from undissolved water and suspended matter.

(b) Corrosion: The gasoline shall not discolour a test strip more than A.S.T.M. Standard No. 1 on the test for corrosion (A.S.T.M. procedure D-130).

(c) Vapour Pressure: The vapour pressure as determined (A.S.T.M. procedure D-323) shall not be less than 9 lbs. for Winter Gasoline and shall not exceed 11 lbs. for Summer Gasoline and 14 lbs. for Winter Gasoline. A vapour pressure one pound greater shall be permitted in each case at the refinery or other point of wholesale delivery.

(d) Sulphur: The total sulphur content as determined (A.S.T.M. procedure D-90 - 34T or D-1266) shall not exceed 0.15 per cent by weight.

(e) Gum: The gum content as determined (A.S.T.M. procedure D-381) shall not exceed 7 mg. per 100 ml.

(f) Freezing Point: For winter gasolines only: The freezing point of the fuel, as indicated by the initial formation of solid matter, shall not be higher than minus 60°F. (Minus 51°C.) The method of determination shall be as in C.G.S.B. specification 3-GP-0/32.1.

(g) Lead Content: The lead content as determined (A.S.T.M. procedure D-526) shall not exceed 5.05 grams per Imperial Gallon. Lead Alkyls other than tetraethyl lead may be used up to a lead content of 3.80 grams per Imperial Gallon but any



increment above this amount shall be achieved by the addition of tetraethyl lead.

(h) Antiknock Compounds: Supplementary antiknock materials (other than lead alkyls) may be used. The name and approximate amount of each shall be reported to the Minister.

(i) Distillation Range: The distillation Range shall be as follows:

	Temperature in °F.	
	<u>Summer</u>	<u>Winter</u>
10% of the fuel shall be evaporated between	110-135	95-125
Not less than 50% of the fuel shall be evaporated at	245	235
Not less than 90% of the fuel shall be evaporated at	365	365

(1) The distillation range shall be determined by A.S.T.M. procedure D-86.

(2) The phrase used above, "Not less than 10% of the fuel shall be evaporated at 155°F." is equivalent to the phrase "10% of the fuel shall evaporate at a temperature of not higher than 155°F."

(3) For the purposes of the distillation specification the volume evaporated at any temperature shall be taken as the volume collected plus the distillation loss as determined at the end of the test.

(4) Distillations may be made at any elevation provided that the observed temperatures are corrected to the temperatures that would presumably have been observed if the distillation had been made at normal barometric pressure at sea level.

(5) The observed distillation temperatures may be corrected for the effect of difference between actual barometric pressure and normal pressure at sea level by means of the corrections in the following table "A".







4. The tests to be made under the foregoing specifications shall be made on the gasoline as sold, and shall, unless otherwise specified therein be made in accordance with the current procedures for such tests adopted, or tentatively adopted by the American Society for Testing Material (A.S.T.M.) or by the Canadian Government Specifications Board (C.G.S.B.) respectively, or modification of such tests where said modification is introduced for convenience and does not affect the results obtained.

# APPENDIX 2 CHANGES MADE IN ALBERTA GOVERNMENT SPECIFICATIONS FOR GASOLINE

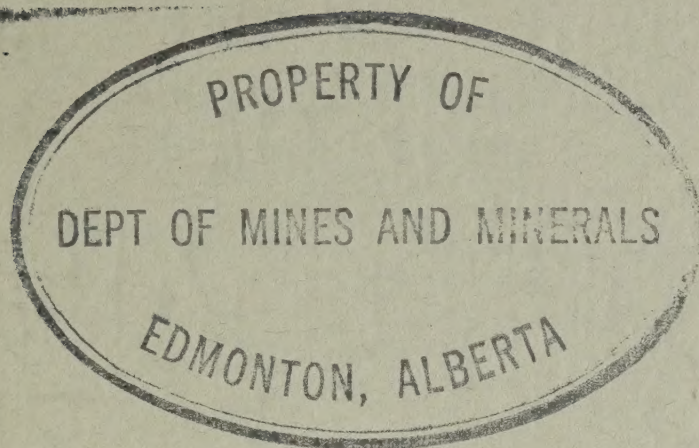
Year	1941	1948	1950	1958	1962
Octane Number:					
Motor Prem.	Min. 75 Max. 78	Min. 75	Min. 76		Min. 95
Motor Reg.	Min. 66 Max. 70	Min. 70	Min. 72	Min. 88	Min. 89
Research Prem.				Clear	Clear
Research Reg.				Pass	Max. #1
Appearance	Clear	Clear	Clear		
Copper Corrosion	Pass	Pass	Pass		
Vapour Pressure, lbs.					
Summer	Max. 9.5	Max. 10	Max. 10	Max. 10	Max. 11
Winter	Max. 13	Max. 13	Max. 13	Max. 13	Min. 9 Max. 14
Sulphur, %					
Summer	Max. 0.15	Max. 0.15	Max. 0.15	Max. 0.15	Max. 0.15
Winter	Max. 0.10	Max. 0.15	Max. 0.15	Max. 0.15	Max. 0.15
Gum, mgm./100 ml.	Max. 10	Max. 7	Max. 7	Max. 7	Max. 7
Freezing Point, °F.	Max. -76	Max. -60	Max. -60	Max. -60	Max. -60
Tetraethyl Lead:					
ml./gal.		Max. 3.6	Max. 3.6	Max. 3.6	Max. 5.05
gm./gal.					Distilled
Distillation Range, °F.	Recovered	Distilled	Distilled	Distilled	Min. 110 Max. 135
10% Summer	Max. 155	Max. 155	Max. 155	Max. 155	Min. 95 Max. 125
Winter	Max. 140	Max. 140	Max. 130	Max. 130	Max. 245
50% Summer	Max. 260	Max. 260	Max. 260	Max. 255	Max. 235
Winter	Max. 257	Max. 255	Max. 250	Max. 255	Max. 365
90% Summer	Max. 360	Max. 370	Max. 370	Max. 370	Max. 365
Winter	Max. 356	Max. 370	Max. 370	Max. 370	Max. 365
Loss, %	Max. 2.5	Max. 2.5	Max. 370	Max. 370	











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